

Customer No.: 31561
Application No.: 10/605,160
Docket No.: 11439-US-PA

REMARKS

This is a full and timely response to the outstanding Final Office Action mailed February, 20, 2007. Applicants submit that Claims 7 and 11 has been amended. The supports for the amendment claims can be found from the paragraph [0023] of the specification, while no new matter entered.

Interview Summary

The undersigned would like to thank Examiner McDonald for granting a telephonic interview on April 30, 2007, during which the 35 U.S.C. 102 and 103 rejections were discussed. More particularly, the undersigned and the examiner discussed the rejections and the teachings of the Sandhu reference. After discussing this matter, the Examiner agrees that the prior art fails to teach that the ultimate speed of the ionized metallic atoms right before reaching the wafer has been decreased and an application of a single conductive mesh.

Claim Rejections 35 U.S.C. 102

The Office Action rejected Claims 11 and 12 under 35 U.S.C. 102(e) as being anticipated by Sandhu (US Pat. 6,752,912).

In response to the rejection to claims 11 and 12 under 35 U.S.C. 102(b) as being anticipated by Sandhu, Applicants have amended claim 11, and hereby otherwise

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traverses this rejection. As such, Applicant submits that claim 1 is novel over Sandu.

Claim 11, as amended, is recited in part:

11. An ionized physical vapor deposition (I-PVD) process, comprising the steps of:

...

passing the ionized metallic atoms through a conductive mesh before reaching the wafer such that the ionized metallic atoms right before reaching the wafer surface are able to decelerated and form a metallic thin film on the wafer.

Applicant submits that Sandhu fails to teach, suggest, or disclose, such process, comprising "passing the ionized metallic atoms through a conductive mesh before reaching the wafer such that the ionized metallic atoms right before reaching the wafer surface are decelerated and form a metallic thin film on the wafer", as required by claim 11. According to the description of Sandhu, the positive ions are under the influence of the voltage applied to grid 44 at all time except when they are very near grid 42. And the positive ions basically change direction without decelerating because the positive ions are still drawn by the higher negative voltage that is being applied to Grid 44. So, the present invention is fundamentally different from that in the prior art.

Further, the present invention teaches accelerating the ionized metallic atoms first, which is resulted from the bombardment of the plasma on the target layer, followed by decelerating the ionized metallic atoms using a conductive mesh. Hence, the ultimate

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speed of the ionized metallic atoms right before reaching the wafer surface has been decreased. However, even assuming the repulsion or deflection by Grid 42 decelerates the ionized metallic atoms, the ionized metallic atoms are again being accelerated to full speed by Grid 44 after passing through Grid 42. Hence the ultimate speed of the ionized metallic atoms right before reaching the wafer is again accelerated. In brief, Sandhu teaches the application of two grids, both used to accelerate the ionized metallic atoms. Accordingly, claim 11 as currently amended should not be considered as being anticipated by Sandhu or any of the other cited references, taken alone or in combination, and should be allowable.

If independent claim 11 is allowable over the prior art of record, then its dependent claims 12-13 are allowable as a matter of law, because these dependent claim contain all features of their independent claim 11. In re Fine, 837 F.2d 1071 (Fed. Cir. 1988).

Claim Rejections 35 U.S.C. 103

The Office Action rejected Claims 7, 10, 13 under 35 U.S.C. 103(a) as being unpatentable over Sandhu in view of Katsuki et al. (US Pat. 5,728,276). Also the Office Action rejected Claims 8 and 9 under 35 U.S.C. 103(a) as being unpatentable over Sandhu, in view of Katsuki et al. as applied to claims 7, 10 and 13 above, and further in view of Givens et al. (US Pat. 5,807,467).

In response to the rejections thereto, Applicant has amended claim 7 to include allowable subject matter presented in currently amended claim 11, which allowability has

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been discussed as aforementioned. As such, Applicant submits that claim 7 is also allowable.

Claim 7, as amended, is recited in part:

7. An ionized physical vapor deposition (I-PVD) process, comprising the steps of:

...

applying a negative bias voltage to the target and a smaller negative bias voltage to the conductive mesh for depositing a thin film over the wafer, wherein the negative bias voltage applied to the target produces and accelerates ionized metallic atoms, and the conductive mesh being applied with the smaller negative bias voltage such that ~~decelerates~~ the ionized metallic atoms right before reaching the wafer surface are decelerated.

Similarly as discussed addressing to claim 11, Sandhu fails to teach, suggest, or disclose a process comprising: "the conductive mesh being applied with the smaller negative bias voltage such that the ionized metallic atoms right before reaching the wafer surface are decelerated". Therefore, claim 7 is submitted to be novel and unobvious over Sandhu, or any of the other cited references, taken alone or in combination, and thus should be allowed.

If independent claim 7 is allowable over the prior art of record, then its dependent claims 8-10 are allowable as a matter of law, because these dependent claim contain all features of their independent claim 7. In re Fine, 837 F.2d 1071 (Fed. Cir. 1988).

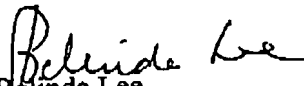
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CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 7-13 are in proper condition for allowance and an action to such effect is earnestly solicited. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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Respectfully submitted,


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